albumoses or peptones, it clears up on heating (before the boiling-point is reached) and reappears when the tube cools.

The author is satisfied from careful experiments, that—1, the precipitate is really a proteid one; 2, that it is always obtained when proteid is present in the various abnormal conditions of urine which may have to be examined; 3, that the precipitate cannot be caused by any other non-proteid constituent of the urine. Cloudy phosphatic urine clears adding the reagent.

Urine containing excess of urates gives no precipitate, nor does proteid-free bilious urine. As regards the presence of a large quantity of mucin this is not likely to prove a source of error. Moreover, it is probably only in the case of alkaline urine, when there is at the same time a marked irritation of some part of the urinary passages, yielding a greatly increased mucous secretion, that the amount of mucin in the urine can be sufficient to come into question at all. But in such conditions of the urinary tract the detection of a trace of albumin is probably of no significance. Normal urine gives no reaction with salicyl-sulphonic acid.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE UNIVERSITY AND GERMAN HOSPITALS;

ASSISTED BY

EDWARD MARTIN, M.D.,

CLINICAL PROFESSOR OF GENITO-URINARY SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE HOWARD HOSPITAL AND ASSISTANT SURGEON TO THE UNIVERSITY HOSPITAL.

RELAPSE OF HERNIA AFTER VARIOUS OPERATIONS FOR RADICAL CURE.

Since **BULL** has had a more extensive experience with the radical cure of hernia than any other surgeon of this country his utterances upon this subject bear great weight. During the past three years, aided by his assistant, **DR. S. E. MILLIKEN** (*New York Medical Journal*, vol. liii., No. 22), he has carefully examined the histories of patients applying to the Hospital for Ruptured and Crippled in the hope of furnishing some statistical evidence of the value of different methods of radical cure of hernia. The tabulation made of relapsed cases numbers 119. In 73 cases the method of operation was definitely ascertained.

The average age in all the methods was about the same—from thirty-eight to forty-four years—showing that the extremes of life generally have been avoided. The duration of treatment, practically wound healing, in Czerny's method, where the pillars of the external ring and the integuments are carefully sutured, is almost as great as in the open method. This is an argument in favor of allowing the wound to granulate. It is particularly noteworthy that relapses occurred as late as two years and six months, and three years and four months, and that, on an average, no method shows immunity from recurrence for a longer period than fifteen months. This warrants the statement that future evidence as to the value of different methods must cover an experience of more than three years, and patients who have been without a recurrence for a year have no reason to expect to remain so permanently.

In one table eight cases are given, presumably operated on for radical cure, since the herniæ were reducible, and the operations were performed in the last five years. Relapse ensued after an average period of twenty-four weeks.

The next table gives twenty cases of irreducible strangulated hernia subjected to operation within eight years, without any data as to method. A radical cure may or may not have been attempted. Relapse occurred, on an average, in eighteen months.

These cases certainly demonstrate that many methods are defective and likely to prove disappointing if observed for a sufficient length of time.

Since ten years have elapsed since the modern operations have been in vogue there should be patients who have been more than five years without relapse. Some such patients could naturally be expected to appear at hospitals; no such records are present.

In the hospital books are recorded 46 patients who have been subjected to radical operations, and who present no sign of relapse, and who have been furnished with trusses; of these, only 5 have been under observation for three years, 8 for less than two years, and 32 for less than one year.

In a series of 136 radical cure operations reported by the author a year ago, there were only 4 cases that had been over four years without recurrence.

Eighteen cases are tabulated which were operated on for irreducible strangulated hernia, and in which no attempt at radical cure was made. This latter fact was ascertained from the date of operation (prior to the introduction of modern methods), or was known from the statement of the operator. The patients averaged 45 years. The period at which the relapse occurred varied from one month to 23 years, and was on an average 5 years. It is noteworthy that of 15 of these cases all wore trusses from the time of operation.

The author is not prepared to offer any statistical data bearing on the question of trusses preventing relapse or prolonging a cure. He states in general that the largest and most voluminous protrusions were met with in patients who had worn no truss; and furthermore, he had never seen any evidence of damage to structure by the pressure of the truss. In his own practice he always has his patients fitted with a truss immediately after the wound has healed, and directs that the pressure shall be very slight—that is, shall merely support the parts. Much that has been said against trusses can be laid to the score of the operation, and the condition that the parts are left in by it rather than to the truss. If suppuration is prolonged in the wound, and it is compelled to heal by granulation, a cicatrix of less vitality and less elasticity than the normal skin and subcutaneous fat is left. This structure is not tolerant of pressure. A primary union which restores the parts as nearly as possible to their normal condition will not be unfavorably affected by the truss. On the other hand, in a wound with much cicatricial tissue there is a natural tendency to softening and yielding, and this tendency should be hastened by the pressure of the truss without and the viscera within.

In cases treated by the open method the orifice of the relapsed hernia is not unlike that of ventral herniæ—that is, an opening in the wall without any canal, so that the hernia protrudes directly forward. This condition makes greater difficulty in the adaptation of a truss, which is further enhanced by the thinness of the yielding cicatrix. Although at first the cicatrix of the open operation can be recognized by its depressed situation and firm, contractile, tense character, at a later period it begins to yield in places or all along its line, and ultimately presents the features just mentioned.

Although these patients are not cured, the majority are certainly improved. They find much satisfaction in the fact that the protrusions are not so large as before operation; they experience increased comfort and security in the wearing of a truss. The author states that the figures given do not afford any valuable evidence as to the comparative reliability of different methods, but only emphasize the lack of promise to effect a cure. He believes that it is still wise to continue to strive for better methods. He advises that the term cure should be dropped, and the value of given procedures should be estimated by the relative proportion of relapses. That plan will be judged best which shows the smallest number of relapses in the course of the longest period of observation; such period should be at least five years. He further believes that all procedures should be so devised as to insure prompt healing of the wound, and that the support of a truss should be insisted on from the time the patient leaves his bed.

The Seat of Puncture in Paracentesis Abdominis.

Trzebicky (*Archiv für klin. Chirur.*, Bd. xli., Heft 4), in performing paracentesis abdominis at the point of election—that is, midway between the umbilicus and the anterior superior spine of the ilium—wounded a large bloodvessel which gave such troublesome bleeding that the life of the patient was threatened. The hemorrhage was arrested by compression of the common iliac artery. Incited by this experience, and by several reports of fatal bleeding following puncture at this point, Trzebicky conducted an experimental research upon a large number of cadavers. As a result of this he announces the following conclusions:

In the majority of cases paracentesis performed at a point midway between the umbilicus and the anterior superior spinous process of the ilium is perfectly safe, since neither the epigastric artery nor any large branch of this vessel is liable to be wounded. The artery commonly crosses this line at the junction of the inner with the middle third.

In a certain proportion of cases, however, the epigastric artery or one of its branches lies directly beneath the point of election.

The course of the epigastric artery is seldom exactly similar in the two sides of the body.

Since the artery runs within the sheath of the rectus muscle, its course depends mainly upon the position of this muscle. In case the two recti are separated by abdominal distention, the artery is displaced so that it lies very near the point of election for puncture. The rectus muscle does not, however, bear a constant relation to the artery. At times, even though the muscle is displaced to the side, the artery lies near the middle line.

Variations in the origin of the epigastric artery seem to have no influence on the course of the former vessel.

The artery is usually accompanied by a single vein.

Paracentesis abdominis should be performed either in the linea alba or in the outer half of the line joining the umbilicus and anterior superior iliac spine. In case the linea alba is selected, it is not important to keep strictly in the middle line, since there is an arterial branch which may be wounded if the trocar is entered, even slightly, to one side.

CATGUT INFECTION IN THE DRY TREATMENT OF WOUNDS.

KLEMM (*Archiv für klin. Chirur.*, Bd. xli., Heft. 4), on adopting the dry treatment of wounds, employed catgut as the material for placing buried sutures, and was surprised to observe as a result that abscesses developed at the site of operation much more frequently than was the case when he employed silk alone as suture and ligature material. At first this was attributed to some carelessness in operative technique, but even after the minutest observance of every precaution suppuration still occurred. For the first few days after operation there was no fever, no local pain or tenderness. On the sixth day, when the silk sutures were removed (the wounds were not drained), there seemed to be healing without disturbance by microörganisms. On the eighth or tenth day there was an elevation of temperature and swelling and tenderness in the region of the wound. On tearing open the latter an abscess was found, which, without exception, was found in the deeper part of the incision, where the catgut had been placed. The catgut employed was prepared by repeated washings in five per cent. alcohol-sublimate solutions until the latter showed no turbidity. The catgut was then stored in absolute alcohol, from which it was not taken until it was needed for use.

To determine whether this method of preparation rendered the gut sterile, a great many culture experiments were carried out. They all showed that the catgut thus treated was germ-free. Klemm next implanted in the deep tissues of dogs catgut prepared as first described and portions of sterilized silk of corresponding sizes. Examination some days later showed septic inflammation about the catgut implantations, whilst the tissues about the silk were in a normal condition. Culture of the catgut showed countless colonies of microörganisms. In the silk there were either none or very few.

From these experiments it is evident that catgut can be surely sterilized, but that, even though itself germ-free, it greatly favors infection of wounds. This infection, of course, takes place during operation, since it is almost impossible to keep a wound absolutely germ-free. The few germs which thus gain access find a favorable medium in which to grow in the softening, non-resistant catgut.

BOTTINI'S METHOD OF TREATING THE ENLARGED PROSTATE.

MORREOTTI (*British Medical Journal*, 1891, No. 1586) describes Bottini's method of treating enlarged prostate by means of the galvano-cautery. This method is designed to remove or lessen the mechanical obstruction to the outflow of the urine. To accomplish this a special instrument has been devised. This consists of an incisor apparatus and a battery. The former is a catheter-shaped metal tube, the lumen of which is divided into four separate compartments; two of these are for the conducting of electric wires, the other two are channels for the passage of a stream of cold water, which runs to the distal extremity of the instrument, thus preventing it from becoming over-heated. The conducting wires end in a cautery knife, which, when heated to a dull red, is applied to the hypertrophied tissue. This knife can be screwed backward and forward, and can be completely shielded by the curved point of the instrument.

In performing the operation the patient's urethra should be habituated to the use of the instrument before cauterization is attempted. Anæsthesia is not always necessary. Water need not be injected into the bladder unless this viscus is quite empty. The patient is placed in the lithotrity position and the instrument is used in the usual way. When the point is in the bladder it is turned downward, and is then drawn forward so as to cause the beak to hitch against the prostate and bring the cautery into contact with the part upon which it is desired to act. By exposing the knife, connecting the current, and gently elevating the handle of the instrument, the point is made to burn its way slowly through the prostate. When the sound of burning is heard the point should be moved backward and forward until the projecting lobe is completely divided. The knife should be allowed to cool; should be returned to its sheath; the instrument should then be passed into the bladder, and should finally be withdrawn.

Bottini has operated in this manner in 57 cases, with 3 deaths. In 32 cases a perfect cure was effected, in 11 there was improvement, and in 12 the result was *nil*. If the hypertrophy is only moderate the obstructing lobe should be entirely destroyed. In advanced cases the surgeon should be content with tunnelling a passage. Both these procedures are contra-indicated if kidney disease is present.

Rupture of the Urethra From Distention.

Bazy (*La Semaine Méd.*, 11 Ann., No. 14) has conducted a number of experiments to determine which portion of the urethra is most prone to rupture when this canal is forcibly distended. In the great majority of cases the urethra gave way at its bulbous portion, though in a certain proportion of cases the tear involved both the bulbous and membranous urethra. In the latter case the resulting effusion was poured into the rectum. In the exceptional cases, when the membranous urethra alone was involved, the extravasation was, of course, found in the space of Retzius. The ruptures were always on the floor of the urethra, or on its lateral walls. From this it follows that in case of tight stricture, even though the lesion is located in the penile portion of the urethra, if rupture takes place this is commonly located at the bulb.

In this relation the author again calls attention to the fact that terminal bleeding, that is hemorrhage following urination does not necessarily originate from the bladder, or from the neck of the viscus. Slight rupture of the anterior urethra may readily occur from the impact of the urine; especially is this the case when there is contraction of some part of the passage. The blood being mingled with a large quantity of water is not noticed at first. As the volume of the stream of urine diminishes it becomes more distinctly colored, till finally pure blood drops from the meatus. This form of hemorrhage must be diagnosed from that which originates in the bladder, as the latter is often of serious diagnostic import. The urethral hemorrhage is attended with burning, but is not marked by the straining and sensation of something that is left in the bladder which marks inflammation or disease of the latter organ.

OTOLOGY.

UNDER THE CHARGE OF

CHARLES H. BURNETT, M.D.,

AURAL SURGEON, PRESBYTERIAN HOSPITAL, ETC., PHILADELPHIA.

THE AFFECTIONS OF THE EAR IN TABES DORSALIS.

DR. LEOPOLD TREITEL, of Berlin, has made a careful examination of the ears in a number of tabetic cases, and his conclusions are as follows (*Archives of Otology*, vol. xix.): In five cases of tabes, where the hearing was affected, only two the author considers as probably due to an affection of the auditory nerve. Careful study leads him to the conclusion that not only the perceptive apparatus of the ear, but also the conducting apparatus is affected. In one case, at least, there was reason to believe that changes had occurred in the mucous membrane of the tympanic cavity, "which depend on a retrograde metamorphosis, and may also be called sclerosis."

The author concludes that particular trophic fibres of the fifth nerve must be diseased, which may be affected alone, or together with sensory fibres. In one case trophic changes in the tract of the fifth nerve and the glosso-pharyngeal nerve were observed—two nerves which send branches to the tympanic cavity. From numerous observations Treitel is inclined to believe that "sclerosis of the posterior columns of the cord not rarely causes trophic changes in the middle ear, which may lead to disturbances of hearing." Such changes might be found frequently, if looked for, at necropsies. A number of facts seem to indicate the development of sclerotic changes in the middle ear from a tabetic cause.

It is fair to suppose that the aural affection is due to the tabetic disease, "when the disturbance in hearing is first noticed after the undoubted beginning of the tabes, no aural disease having previously existed, provided that the otological examination corresponds to the clinical history." The author cannot confirm the statement of Gradenigo,[1] "that especially in cerebro-

---

[1] THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, Nov. 1890, and Archives of Ohrenh., vol. xxx., 1890.